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Study of Atmospheric Effects in SKYLAB Data
Quarterly Progress Report, August 1973

EREP Investigation 410 M
NASA Contract NAS9-13272

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This report covers progress during the second quarter of Contract NAS9-13272, "Study of Atmospheric Effects in SKYLAB Data", EREP No. 410M. The work is being conducted in the Infrared and Optics Division of the Environmental Research Institute of Michigan, under the general supervision of Mr. R. R. Legault. The principal investigator is Mr. F. J. Thomson.

Significant activity during this quarter involved the acquisition of our first complete data set in conjunction with an SL-3 overpass. Subsequent attempts to acquire a second and final set of data during the SL-3 mission were unsuccessful due to unsuitable weather conditions.

On 5 August 1973, personnel from ERIM's Infrared and Optics Laboratory were able to coordinate ERIM ground measurements with a SKYLAB track 61 overpass, and ERIM aircraft, and to acquire our first data set from our primary test site in Ingham County, Michigan. A ground party deployed to the site, set up instrumentation, and began data collection three hours prior to the satellite overpass time of 11:00 a.m. EDT. Approximately one hour prior to satellite overpass time, the ERIM C-47 aircraft began the first of 4 successive data collection passes over the test site. Aircraft passes were made at altitudes of 10K, 5K, 2K, and 1K feet with the 2K ft pass being simultaneous with the time of satellite overpass.

Ground support measurements included spectral and broad band irradiance to determine the characteristics of the incident radiation. Radiance measurements of standard reflectance panels were also made at the time of the aircraft overflights. These panels are large enough to be "seen" by the plane. Radiance measurements made on them provide data that will assist in the analysis of the aircraft data. Data acquired with the aircraft included twelve channels of terrain radiance information collected by the M-7 multispectral scanner and aerial photography for documentation purposes. The data from the aircraft will in turn be used to assist in the SKYLAB data analysis. Both ground-based and aircraft data are now in the process of being analyzed.

Plans were made for collecting a final set of data on 10 August and 30 August. Unsuitable weather conditions forced the cancellation of those data collection plans.

Three subsequent data collection attempts made in September were also cancelled as a result of the prognosis of unacceptable weather conditions. Since the drift of SKYLAB off its nominal orbit excluded our primary test site from the S192 field of view, plans for these three attempts necessitated an additional expenditure of effort for alternate site selection. It is hoped that the orbital track of SL-4 can be stabilized to avoid such extra costly effort.

We are presently awaiting the receipt of screening images for data taken by SL-3 on 5 August. We also look forward to SL-4 in order to acquire our final data set.

Respectfully submitted:

F. J. Thomson

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